



Draft Memorandum

To:	Electron Hydro
From:	David Zippin, PhD (Project Director) Adam Wagschal, MS (Project Manager) Greg Blair, MS (Lead Biologist)
Date:	November 5, 2021
Re:	Electron Hydro Habitat Conservation Plan Assessment

Introduction

Electron Hydro (EH) is proposing improvements to their hydroelectric facility on the Puyallup River. The improvements would reduce facility impacts to aquatic species, including three fish species that are listed under the Endangered Species Act (ESA): Puget Sound Chinook salmon (*Oncorhynchus tshawytscha*), Puget Sound steelhead trout (*O. mykiss*) and bull trout (*Salvelinus confluentus*). However, construction of the improvements and ongoing operation of the facility will result in take of these fish species as defined by the ESA. The Electron Hydroelectric Project ("Project") Habitat Conservation Plan (HCP) will serve as the basis for applications from EH for incidental take permits from the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) under the ESA. A preliminary draft HCP (dated June 1, 2020) was prepared for the Project, which will be revised by ICF. This memo describes ICF's methods and recommended HCP revisions.

Methods

ICF reviewed the preliminary draft HCP to answer the following questions:

1. Are all of the required HCP elements drafted? If not, which elements still need to be drafted?
2. Do these draft sections meet permit issuance criteria for the federal incidental take permits? If not, in what ways is the HCP deficient and needs revision?
3. Do the draft sections contain the information necessary to determine whether it will meet permit issuance criteria?
4. Does the HCP contain unnecessary information that makes agency review more difficult and time consuming? If so, which parts of the HCP can be safely deleted?

5. Is the HCP organized in a way that clearly presents the necessary information for USFWS and NMFS to determine whether it meets permit issuance criteria? If not, how could the document be reorganized to present the necessary information more clearly?
6. What technical issues need to be resolved in order to reach a public draft HCP?
7. Is the HCP conservation strategy and monitoring program clear enough to be implemented without substantial additional work in implementation?

ICF conservation planning staff reviewed the following documents to conduct this assessment:

- Preliminary Draft HCP and Appendices (June 1, 2020)
- All comments provided by USFWS, Washington Department of Fish and Wildlife (WDFW), and the Puyallup Tribe (no written comments were provided by NMFS); and
- Biological Opinion issued for Phase 1 of facility construction.

Conclusions

Overall, the document is well written and relatively clear and concise. However, there are several topics that will need substantial additional information and analysis in order for the HCP to meet permit issuance criteria. Our recommended major revisions are summarized below. In the final section we list all of the more minor changes to the document that we recommend in order to improve organization and clarity and to fill important information gaps. We recommend reviewing all of these recommendations with USFWS, NMFS, and the WDFW during an upcoming workshop, preferably in person. Such a workshop will help secure their buy-in on ICF's proposed approach and clarify some of the analytical and information needs we have identified.

Recommended Major Revisions

Following are critical path HCP components that will require input and commitments from EH, USFWS, and NMFS. The HCP has many components that can be developed in parallel but focusing on these major revisions will allow for efficient HCP development.

1. **Covered Activities:** The HCP must include a clear description of the activities proposed for coverage. Elements of the project that do not require coverage may be described for context but it should be made clear which elements are covered and which are not. It is important to settle on the covered activities early and to minimize changes during HCP development. Key components of the covered activities that need more detail include the fish screens, the fish ladder and its operation, and the proposed flow regime (these elements are also part of the conservation strategy).
2. **Effects Analysis:** The effects analysis will be based on the covered activities. The analysis will include both quantitative and qualitative analysis of the project's take under the ESA, including the impacts of the taking on local populations of each covered species. The impact of the taking should be evaluated in terms of the effects on the population of each species in the Puyallup

watershed. The numbers of each covered species expected to be taken should be compared to the total numbers of fish expected in the river, by life stage, if such data are available. Further analysis is also needed to understand hydraulic effects of the project on fish habitat in the diversion reach (e.g., effects to turbidity, bed load movement, flows and water temperature) and related effects to covered species. The nature and extent of these analyses needs to be clearly defined.

3. **Mitigation:** The HCP mitigation will be based on the level of take identified in the effects analysis and the effects of the taking on the covered species. The HCP has a good description of some of the avoidance and minimization measures that EH will implement to reduce effects on the covered species. Further descriptions are needed of the avoidance and minimization measures for bladder operation, fish ladder operation, and flow regime. Electron Hydro will need to commit to specific measures to mitigate for the remaining effects of the take on each covered species. ICF will work with EH to identify habitat restoration opportunities that can serve as mitigation and to identify new opportunities if needed. In some cases, mitigation projects can result in take and it is beneficial to cover these projects in the HCP.
4. **Monitoring:** Details of the proposed monitoring program will need to be developed and negotiated with USFWS and NMFS. For example, how will the performance of the fish screen be monitored? How will the performance of the fish ladder be monitored? How will incidental take of the covered fish be monitored? And how will the restoration projects be monitored?
5. **Covered Species Habitat:** The preliminary draft HCP is very focused on critical habitat, including the description of critical habitat and whether critical habitat occurs in the plan area. While this is important, it is secondary to whether suitable habitat for the covered species occurs in the plan area, what types of suitable habitat are present, where this habitat is located, and how the species utilize this habitat. The HCP should be revised and expanded to focus on the habitat suitability of the plan area for each life stage of the three covered species.

Relatively Minor Revisions

Following is a description of specific revisions that will be made to the draft HCP that are relatively minor.

Global Comments

1. Clarify throughout the document that there are two permit applications and two permits, one from USFWS and one from NMFS. For example, "permit" should always be plural unless referring to one of the agency's permits alone.

Chapter 1: Introduction

1. See comment in Ch. 2 regarding project description vs. covered activities (p. 1).
2. Sect. 1.1 (Overview and Background). This section seems to imply that the project had never before been subject to the ESA. Suggest rewording or deleting that commentary (p. 1).
3. Sect. 1.1. There is a lot of background provided on what Puget Sound Energy did prior to Electron purchasing the facility under the Resource Enhancement Agreement with the Puyallup

Tribe, and the events and repairs that led up to this point. This background references many project elements that have not been explained yet, so it is difficult to follow on pages 2 and 3 of the document. Furthermore, the Resource Enhancement Agreement is not an ESA permit, so it is not necessarily relevant to the HCP as a whole. We recommend moving the background on the Resource Enhancement Agreement to the conservation strategy because it serves as useful context for the proposed conservation measures. We recommend moving the rest of the section on events leading up to the HCP to the covered activities chapter (p. 2-3)

4. Sect. 1.1.1 (Description of the Facility).
 - a. This is a good summary of the facility. Recommend revising title to reflect that (“summary” not “description”).
 - b. Recommend deleting sentence “Operating the Diversion affects instream flow in the approximately 10.5 miles of the Puyallup River (the “Middle Reach”) that bypasses the Intake and Flume, and remains in the river.” Save all statements about effects until the effects analysis.
 - c. Figure 1.1 is very difficult to read. Recommend replacing with a clearer graphic, not the facilities overlaying air photos.
5. Sect. 1.3 (Plan Area/Permit Area). The plan area is much larger than it needs to be. The plan area should be defined as the location of all covered activities and mitigation sites. It is not necessary to define the plan area as all land owned by EH. Focusing the plan area and permit area only on the EH facilities likely to result in take of the covered species will help focus the HCP and the NEPA analysis. We recommend a more focused plan area and permit area that is limited to where take is reasonably likely to occur. For example, if there is no take expected from EH timber operations, then timber harvest activities can be removed from the plan area (and removed as covered activities).
6. Sect 1.5 (Alternatives to the Taking). This section is important but in the wrong place in the document. Alternatives to the taking can only be understood after readers first understand the proposed covered activities. We recommend moving this section to the end of the covered activities chapter or to the end of the effects chapter (p. 5).
7. Sect. 1.6 (Coordination with Services and Tribe). The discussion of the two phases is somewhat confusing because it seems to imply that the HCP addresses both phases. This has not been determined yet. We will work with EH to clarify what is covered in the HCP.
8. Sect. 1.7.3 (Magnuson-Stevens Fishery Conservation and Management Act). Clarify whether the project site includes any designated Essential Fish Habitat and for which species. If it doesn’t, then the section can be deleted.
9. Sect. 1.7.4 (National Historic Preservation Act). We recommend that the relevance of the NHPA to the HCP be clarified. Otherwise, readers will wonder why it’s mentioned.

Chapter 2: Project Description and Covered Activities

1. It is unclear whether “project description” is the same or different from “covered activities”.

- a. The HCP should only describe the portions of the project that are likely to result in take of the covered species (i.e., the covered activities).
 - b. If there are elements of the project that do not need to be covered by the HCP (e.g., they do not result in take of the covered species), they can be described in the HCP for important context but clearly described as not covered.
2. The chapter would benefit from a few graphics that illustrate the location and nature of each of the covered facilities. Some aerial photos are incomplete or unclear.
3. Sect. 2.1.1. (Upstream Fish Passage). The covered activity relevant to upstream fish passage is not clearly stated. Is it maintenance of the fish ladder? At what frequency? Will the fish ladder be improved or reconstructed? If so, that is not stated in this section.
4. We see that Sect. 2.2, at the end of the chapter, describes an important nuance that some facilities cease to be covered by the HCP after fish are excluded from the diversion. This detail should be added to each of the descriptions of the covered activity to which it applies.

Chapter 3, Covered Species

1. The three sections describing the habitat and use of the plan area by the covered species (Sect. 3.1, 3.2, and 3.3) are very focused on critical habitat, including the description of critical habitat and whether critical habitat occurs in the plan area. While this is important, it is secondary to whether suitable habitat for the covered species occurs in the plan area, what types of suitable habitat are present, where this habitat is located, and how the species utilize this habitat. These sections should be revised and expanded to focus on the habitat suitability of the plan area for the three covered species. The critical habitat designation could be used to support that discussion, but other sources of information should also be considered. The goal of these sections should be to provide all of the existing condition information needed to support the effects analysis.
2. Section 3.1.1 Status and Distribution references NMFS 2006 (Puget Sound Chinook Recovery Plan). The HCP says "The Puyallup population must be recovered from the current "high risk" status to "low risk" in order for the Puget Sound ESU to reach viability (NMFS 2006)". In fact, only the White River (early, or spring-run population) must reach low risk for delisting (NMFS 2006 Supplement Table 1).
3. Sect. 3.2 (Puget Sound Steelhead Trout). This section should describe whether the species occurs in the plan area. The implication is that it does, but the section does not specifically say that or describe occurrences in the plan area.
4. The chapter would benefit from figures illustrating the locations of designated critical habitat for each of the three covered species.
5. Sect. 3.4 (Species in the Plan Area that Do Not Need Coverage).
 - a. We recommend that this section be deleted from the HCP or moved to a short appendix. There is no requirement to justify why species were excluded from the HCP, however, such information could be useful to the agencies in their Sect. 7 consultation.

- b. We recommend discussing this section with USFWS (they are all USFWS species) to determine the best strategy.
- c. If this section is retained as an appendix, we also recommend bolstering the rationale for why species were excluded (e.g., the covered activities would not take the species even if they occur in the plan area).

Chapter 4: Environmental Setting

1. We recommend updating this section to remove statements about covered activities and reorganize Section 4.1 as follows. Hydrology and water quality are influenced by location of the project in the watershed, climate, and land use. The reach level discussion would explain geomorphology of the project reaches and influences of hydrology and water quality on covered species.
 - 1) Project setting
 - 2) Climate
 - 3) Land use
 - 4) Hydrology
 - 5) Water Quality
 - 6) Reach level characterization
2. The first figure on page 32 is good but it is unlabeled. We recommend using a similar map in Chapter 1 as a regional figure showing the general location of the plan area, as long as the plan area is also shown in both figures.
3. The aerial photos on page 33 are unlabeled and do not seem necessary. We recommend deleting them.
4. The figure on page 34 is unlabeled and difficult to read. We recommend either deleting it or clarifying its purpose and improving readability and labeling.
5. The photos on page 35 and the graph on page 36 are unlabeled. We recommend adding figure numbers and titles.
6. The table on page 37 documents temperature thresholds for the covered species
 - a. This table is relevant to the effects analysis, not environmental setting. We recommend moving this table to Chapter 5.
 - b. Also, the table should be labeled more clearly with any sources cited within the table as a footnote. Any acronyms should also be defined in the text or in footnotes.
7. Sect. 4.1.4.2 (Turbidity). Move all statements from this chapter about effects of the covered activities to Chapter 5. An example is found on p. 38 in this section ("Construction and operation of the Project has the potential to impact naturally occurring turbidity, sedimentation and bedload quantities."). In addition, immediately after this sentence at the bottom of p. 38 and the top of p. 39 the commentary on project effects or avoidance of effects should be moved to Chapter 5.

8. Sect. 4.2 (Climate Change). We recommend updating and revising this section to reflect the scientific consensus about climate change and its likely effects in the plan area. The section would also benefit from more citations of the scientific literature that pertain to the area.
 - a. Note that Sect. 7.1.2 (Climate Change) has some of this improved information and should be moved or copied forward to Sect. 4.2.
9. The figure on p. 40 of Mt. Rainier glaciers needs a label and source citation. If possible, it should be replaced with a map with more recent data than 1994.

Chapter 5: Potential Biological Impacts and Take Assessment

1. We suggest changing the title of this chapter to “Biological Impacts and Take Assessment”. We recommend avoiding the use of “potential” when describing impacts. Electron Hydro should either request take authorization for an impact or not. If EH requests take authorization for an impact that may or may not occur, the agencies must assume the impact will occur. Therefore, the term “potential” can be confusing to readers in this context.
2. The effects analysis and the conservation measures lump all impacts, effects, and benefits of all three covered species. In some cases, different life stages of the three fish are stated, but it is not clear whether the effects or benefits apply to each of the three species equally or not. Both chapters must separate out the effects to each covered species. To facilitate these explanations, we recommend.
 - a. Reorganizing the effects analysis chapter to focus on each of the covered species individually. This will result in some repetition, but it’s important to provide separate analyses for each species because USFWS and NMFS must make their permit issuance determination for each species individually and separately. Effects will differ among the species based on differences in life histories and habitat requirements.
 - b. A general organization of the effects chapter would be:
 - i. Introduction
 - ii. Methods
 - iii. Effect mechanisms (mechanisms of effects on all three species)
 - iv. Effects on bull trout
 1. Effects on upstream passage
 2. Effects on downstream passage
 3. Effects on suitable habitat (water quantity, water quality, water temperature, habitat availability, habitat structure)
 4. Effects on Critical Habitat (if included—see comment below about optional nature of this analysis)
 - v. Effects on Chinook salmon (repeat structure for each species)
 - vi. Effects on steelhead

3. With changes to Sect. 7 regulations, the Services have been directing HCP applicants to avoid the distinction between direct and indirect impacts. The first page of the impact analysis makes this distinction. We recommend removing it.
4. Several impacts appear to be missing from the analysis (even if there are no impacts from a particular source, the analysis should justify that):
 - a. False attraction flows from the power plant outflows.
 - b. Changes to river habitat immediately below the power plant, due to high-energy outflows.
 - c. Impingement and predation at the new fish screen after Phase II is complete (this is discussed in Sect. 5.2.2 but not included in the summary list at the beginning of the chapter).
 - d. Effects to fish using the fish ladder during periodic maintenance (the conservation measure does not describe whether barriers will be placed in the fish ladder during maintenance to prevent fish entry).
 - e. To ensure that that effects analysis is complete, we will need to verify this list with USFWS and NMFS.
5. The analysis would benefit from a short “methods” section that describes the assumptions and approach used in the analysis.
 - a. The method section should clarify that the analysis of effects on critical habitat are provided to assist the USFWS and NMFS with their own Section 7 consultation. Evaluating critical habitat effects is not a requirement of an HCP, so it is optional.
6. Sect. 5.2.1 (P. 42). This section states that the new fish exclusion facility and fish screen will eliminate any potential for fish to be entrained in the flume. However, EH discussed with ICF in the field that the trap and truck facilitate at the forebay may be retained in case there is a failure of some kind at the fish exclusion facility (e.g., due to an extreme event in the river at the intake and damage to the screen). This should be clarified in the HCP.
7. Sect. 5.2.2 mixes effects and conservation measure design considerations. We recommend limiting all discussion in Chapter 5 to effects. All discussion of design considerations or potential adaptive management responses (e.g., installing fencing or netting above fish screen to reduce concentrated predation that might occur later) should be moved to Chapter 6.
8. The effects analysis references many of the minimization measures that EH has already put in place or will implement soon. We recommend adding cross-references to where in Chapter 6 (or appendices) these minimization measures are described in more detail so that readers can verify the effects described in Ch. 5.
9. Sect. 5.3. This section is characterized as “Anticipated Impact on Critical Habitat”. We recommend instead that this section be revised to focus on anticipated effects to covered species habitat. The HCP is describing take in the form of habitat modification, which is “harm” per the ESA. This is independent of whether the habitat is designated as critical habitat (if provided, a critical habitat analysis should occur at the end of the chapter, since it is optional).
10. Sect. 5.3.1. The analysis of habitat effects above the diversion.

- a. The analysis cites two estimates of effect, one by Cherry 2016 (800 ft upstream) and one estimate by USFWS (2,700 ft upstream). This requires discussion with USFWS to settle on one estimate. It undermines EH's own analysis to discuss one area of effect and cite a greater estimate.
 - b. The section is missing any discussion of the effects on the covered species of the headcutting upstream.
11. The statement on p. 45 "...the reach immediately below the Diversion is not considered spawning habitat, as it is relatively wide, shallow, and likely to have braided channels." should be supported by citations or personal communications of experts.
12. The effects analysis needs to be revised to focus on whether the expected impacts are likely to take any of the covered species. As it reads now, the analysis is focused on the likelihood of effects to particular habitat parameters, but it is unclear from the analysis whether those habitat effects would result in take of the covered species.
 - a. For example, at the top of p. 46 the draft HCP states "The volume of sediment that moves through the Spillway Sluice Gate will be fairly small in relation to the high flow discharges through the Bladder Spillway. However, it is possible that sediment released by the Sluice could have an impact on spawning/rearing habitat downstream of the Diversion. Turbidity monitoring in the Middle Reach will be used to determine whether Sluice operations have a significant impact on water quality more than 1,500 feet below the Diversion."
13. Sect. 5.4. Impact of the Taking. This section needs substantial work. The impact of the taking should be evaluated in terms of the effects on the population of each species in the Puyallup watershed. The numbers of each covered species expected to be taken should be compared to the total numbers of fish expected in the river, by life stage, if such data are available. The proportion of species taken is one measure of the impact of the taking on the species.
14. Sect. 5.5. The Amount and Extent of Take. This section appears to be a placeholder until EH determines the correct measures of take for each covered species. ICF can propose an approach to completing this section.

Chapter 6: HCP Conservation Program

1. Similar to the effects analysis, the benefits of each conservation measure are described for all three covered species together, implying that these benefits accrue to each species equally. The conservation strategy must minimize and mitigate the impacts of the taking for each covered species individually, not as a group. We recommend taking a similar approach in the conservation strategy as in the effects analysis and have a separate explanation of how and why the proposed conservation measures benefit each species. When possible, these benefits should be quantified, so that the sum of the benefits can be compared to the sum of the impacts of the taking on each species.
2. This chapter starts with the following sentences: "The primary goal of implementing this HCP is to minimize any potential harm to the listed species and their habitat resulting from operating and maintaining the hydropower project. The ideal goal would be to "do no harm" and to assist in the recovery of the listed species."

- a. We suggest revising this statement to include the goal of also mitigating the impacts of the taking to the species (not just minimizing effects).
 - b. We also suggest deleting the second sentence. You should not be including a goal to assist in the recovery of the species if you are not sure that you can provide that. Contributing to recovery is not required, only mitigating the impacts of the taking.
3. Biological goals and objectives. We recommend revisiting these once the conservation strategy is further developed and the effects analysis is closer to being completed, including estimates of take.
 - a. There are 8 goals and 14 biological objectives. That is a lot for a plan of this size and focus and for only three covered species. We recommend consolidating several goals and sets of objectives for simplicity. The HCP probably only needs three goals (one for each species) and perhaps 2 objectives per species, for a total of 6 objectives. Consolidating objectives will help to simplify monitoring requirements.
 - b. Most of the biological objectives are simply restatements of the conservation measures. Instead, biological objectives should be statements of desired future conditions or thresholds relevant to the covered species.
 - c. The biological objectives are also meant to be measurable and, if possible, quantitative. None of the objectives have stated quantitative targets, and it is unclear whether many of the objectives are actually measurable beyond a simple yes/no that a conservation measure has been implemented (which is compliance monitoring, not effectiveness monitoring).
4. Sect. 6.2.1. Upstream Fish Passage.
 - a. What will EH do during periodic maintenance of the fish ladder to prevent or minimize effects to fish using the ladder during maintenance? It would help if the duration of maintenance was described, or any other protocols to minimize effects (e.g., restrictions on maintenance during certain conditions, when practical).
 - b. This section should also describe how EH improved the spillway to direct flows towards the far bank of the river to improve attraction flows to the ladder. This is part of EH's work to improve upstream passage.
 - c. The ramping rate guidelines for the inflatable bladder and the ramping rate limits for the powerhouse are both operational measures to help minimize effects on upstream passage. Those measures should be described or cross-referenced in this section.
5. Sect. 6.2.2.1. Downstream Fish Passage before Phase II is Completed
 - a. Electron Hydro has made substantial improvements to the forebay and the trap + truck system that should be described here, including the new net system (2 nets, smaller mesh, replaced floats and weights) and the wide opening of the flume at its exit to the forebay to reduce water velocity.
6. Sect. 6.2.2.2. Downstream Fish Passage after Phase II

- a. We recommend describing the Fish Exclusion Facility again and explain how it will accomplish the goal of excluding all fish from the flume. The facility is described in covered activities, but the rationale is needed in Ch. 6.
7. Sect. 6.2.3. Instream Flow. This section should be presenting modeling data to answer the question of how often, on average, the minimum instream flow commitment is expected to be reached.
8. Sect. 6.2.4 Instream Water Quality. Neither the temperature or the turbidity sections are conservation measures. Both describe monitoring measures. Move these to the monitoring section of the plan (Sect. 6.4).
9. Sect. 6.3.1. Electron Pond. Quantify the surface area and average depth of the pond to illustrate the amount of spawning habitat that it can provide. The benefit to spawning habitat as a spawning channel would be minor and would be difficult to maintain. However other conservation measures should be considered, including using the ladder for adult monitoring or broodstock collection and using the Electron pond for juvenile salmon acclimation and release. .
 - a. The benefits of maintaining the pond for the covered species are difficult to determine without minimum commitments or estimates of the frequency of its use. Include this information if available.
10. Sect. 6.3.2. Large Woody Debris Supplementation. This conservation measure should be refined to commit to a specific minimum amount of woody debris placement so that the agencies are assured of a particular conservation outcome.
 - a. The minimum amount could be measured in terms of the number of pieces of wood of a minimum diameter, or of a minimum stream bank length over which wood structures will be placed.
 - b. The amount of wood must be quantified in order to estimate the benefits of the conservation measure to each of the covered fish.
 - c. Alternatively, Electron could commit to providing funding for others to implement this measure, such as WDFW or the Tribe.
11. Sect. 6.3.4. This habitat enhancement measure must be refined and developed further to estimate the benefits it can provide to each of the covered species.

Section 6.4: Monitoring

1. Monitoring elements should relate to objectives of the HCP. It is unclear in the Draft HCP the purpose of some of the monitoring elements and how that activity is necessary.
2. Sect. 6.4.1 Fish Ladder.
 - a. A visual inspection of the ladder should occur in July prior to the salmon migration period (beginning in August fall spawning salmon and bull trout and again in January for spring spawning steelhead). A July inspection would provide a construction window for any structural issues. The January inspection would cover the same purpose for any issues that may arise during the winter and spring, but would not have a construction window. This is in addition to the web-based camera system describing in the Draft HCP.

- b. The pool at the tailrace of the ladder should also be evaluated each summer and when adults are moving upstream. It should be monitored for fishway entrance criteria described by NMFS (2011).
 - c. The HCP should provide additional details on how the ladder, tailrace and exit pool will be maintained.
- 3. Section 6.4.2 Downstream Fish Passage
 - a. It would be good to include a description of improvements and monitoring elements developed specific to the forebay improvements (e.g., shape of the exclusion net and visual inspection of the leadline conformity to the forebay bathymetry).
 - b. Include monitoring during sediment removal in the forebay – the process for determining when the forebay or sediment basin will need to be excavated, the steps in removing sediment, and monitoring elements during removal of sediment to avoid take.
 - c. The HCP should provide better detail on what it means to monitor the fish exclusion structure in Phase II. The structure will have specific design objectives detailed by NMFS (2011). A higher frequency of monitoring early in operations would be advised. And monitoring should occur across a range of condition, not only during the first couple of weeks. Conditions at the structure will likely change over the year with higher sediment loads in the winter and spring.
 - d. There have been several entrainment studies at the project when PSE operated the project. Electron Hydro should consider including an entrainment study with the new structure.
- 4. Section 6.4.3 Instream Flow
 - a. Electron Hydro described the gage they installed downstream of the diversion and should reference the specific location in the HCP. The Draft HCP says the gage will be a continuous gage. The gage data can be remotely accessed and this should be described along with the connection to the bladder level and diversion flow rate management.
 - b. Clarify where all flow monitoring will occur.
- 5. Section 6.4.4 Water Temperature
 - a. Section should identify equipment used to monitor temperature, period they will be in river, and availability of the data in a timely manner to ensure temperatures in the diversion reach are consistent with criteria defined in HCP for water temperatures.
- 6. Section 6.4.5 Sediment
 - a. Additional detail is needed here, based on the Draft HCP it appears monitoring discussed in the first paragraph is for suspended sediment.
 - b. Describe purpose for monitoring of head cutting.
- 7. Section 6.4.6 Ramping Rates
 - a. Ramping will occur to meet power demands and will likely need to be monitoring daily.
- 8. Section 6.4.7 Take Surrogates

- a. Need to better determine and describe how take will be qualitatively and quantitatively estimated.
9. Section 6.4.8 Mitigation measures
 - a. More detail is needed on specific mitigation measures committed to.

Section 6.5: Adaptive Management

1. Requires more detailed description of what will actually occur related to sediment adaptive management (what triggers changed management and is the specific management response).

Chapter 7: Changed and Unforeseen Circumstances

1. There are only two changed circumstances described, Damage to Rearing Ponds/Fishery Enhancement Projects and Climate Change. We would typically include the following changed circumstances in addition to the ones listed:
 - a. Species de-listed. Given all three covered species are listed as threatened, a delisting is conceivable during the permit term. It can be helpful to describe what EH will or will not do in response to a de-listing.
 - b. Species uplisted. Any or all of the covered species may be uplisted to endangered during the permit term. It may be helpful to describe that EH and the Services would not need to change anything about the HCP in the event of an uplisting.
 - c. New non-covered species is listed. In the event of a new species being listing that is not covered by the HCP, it can be helpful to describe the procedures that EH would follow to evaluate that circumstance, working with the appropriate Service.
2. Sect. 7.1.1. (Damage to Rearing Ponds/Fishery Enhancement Projects). There is not enough detail in this section about the nature and likelihood of this changed circumstance and how it may or may not affect the covered species.
 - a. There is not enough detail about the planned response of EH to that circumstance.
 - b. As currently described, there is no limit to EH's response to these facilities being damaged. In other words, no matter how many times damage occurs or how much damage occurs, this section obligates EH to repair the damage.
3. Sect. 7.1.2 (Climate Change). This section also has no limits defined for EH's response to changes in the environment due to climate change.

Chapter 8: Funding Assurances

1. The table of Funding Assurances is well organized, but we recommend a different approach. HCP applicants are not required to provide specific funding assurances for each cost item, only general funding assurances for the entire HCP program.
 - a. We recommend that the last column of the funding table be deleted or revised to reflect the funding source, if appropriate.
 - b. Some costs will be one time while others will be annual operating costs. We recommend revising the table to detail both kinds of costs.

2. It appears that EH does not intend to quantify the lost opportunity costs of providing additional instream flow in terms of forgone power generation (table footnote: “Total HCP Costs do not include revenues lost to minimum instream flows and ramping rates”). We recommend that EH consider including that information in the HCP as a project cost. This is similar to the lost revenue of wind turbines when they must be feathered or slowed to reduce impacts to birds or bats—this cost is often reported in wind energy HCPs.

Chapter 9: Amendments

1. We recommend clarifying this short chapter to more clearly distinguish between administrative changes, minor amendments, and major amendments.
 - a. Administration changes can be made by EH and should not require review or approval by the Services, only notification.
 - b. Minor modifications are typically reviewed and approved by the Services but do not require a formal amendment, a Federal Register notice, or additional NEPA compliance.

We recommend adding a new chapter (chapter 10) for Literature Cited.